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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,483	12/15/2003	Alexander C. Pummer	0317-01	3492

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Eric K. Satermo
P.O. Box 19099
Irvine, CA 92623-9099

EXAMINER

LEE, JOHN J

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/736,483	Applicant(s) PUMMER ET AL.	
	Examiner JOHN J LEE	Art Unit 2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 12-20 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-5, 12, 13, 19, and 20** are rejected under 35 U.S.C. 102(b) as being anticipated by Kawano et al. (US patent number 4,849,963).

Regarding **claims 1 and 12**. Kawano discloses that a telecommunications system (Fig. 1) for providing service to a cellular device (12 in Fig. 1) located within a radio frequency (RF) shadow of a communication station (Fig. 1) including a transmitter and a receiver (Fig. 1 and column 3, lines 62 – column 4, lines 65). Kawano teaches that a line-of-sight (LOS) antenna (20 in Fig. 2) for receiving a transmitter signal from the station (11 in Fig. 1) (Fig. 1, 2 and column 3, lines 62 – column 4, lines 65, where teaches an antenna (should be line-of-sight antenna) receives a transmit signal from the cell site base station).

Kawano teaches that a shadow antenna (21 in Fig. 2) in communication with the LOS antenna (Fig. 2 and column 4, lines 33 – column 5, lines 17, where teaches the antenna (line-of-sight) connects to communicate with shadow antenna) and located within a line of sight of the RF shadow (Fig. 1, 2 and column 4, lines 33 – column 5, lines 17, where teaches the shadow antenna located within the antenna (line-of-sight) of the shadow region) and for receiving a cellular signal from the cellular device (12 in Fig. 1) (Fig. 1

and column 3, lines 62 – column 4, lines 65, where teaches the shadow antenna receives the cellular signal from the mobile device). Kawano teaches that the LOS antenna (20 in Fig. 2) for receiving the cellular signal from the shadow antenna (21 in Fig. 2) and transmitting the cellular signal to the station (11 in Fig. 1) (Fig. 1, 2 and column 3, lines 62 – column 4, lines 65, where teaches the mobile device transmits the cellular signal to shadow antenna, and the shadow antenna transmits the received signal to the antenna (line-of sight) for transmitting the received signal to the call site base station). Kawano teaches that the shadow antenna for receiving the transmitter signal from the LOS antenna and transmitting the transmitter signal to the RF shadow (Fig. 1, 2 and column 3, lines 62 – column 4, lines 65, where teaches the call site base station transmits the transmitting signal to the antenna (line-of sight), and the antenna (line-of sight) transmits the received signal to the shadow antenna for transmitting the received signal to the mobile device).

Regarding **claim 2**. Kawano discloses that an interconnection disposed between the antennas for communicating the signals between the LOS antenna and the shadow antenna (Fig. 2 and column 4, lines 33 – column 5, lines 61, where teaches interconnecting and communicating the signal between LOS antenna and the shadow antenna).

Regarding **claim 3**. Kawano discloses that an amplification section disposed between the antennas for amplifying the transmitter signal and the cellular signal (Fig. 2 and column 4, lines 33 – column 5, lines 51, where teaches the signal generator is amplified by amplifiers between the antenna).

Regarding **claim 4**, Kawano discloses that the amplification section (50K in Fig. 3) includes an LOS circulator (23 in Fig. 3) and a shadow circulator (27 in Fig. 3) defining an LOS-to-shadow path (51 through 62 in Fig. 3) and a shadow-to-LOS path (70 through 77 in Fig. 3) between the antennas (20, 21 in Fig. 3) (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches the amplification section includes LOS duplexer defining LOS to shadow path and shadow duplexer defining shadow to LOS path between the antennas). Kawano teaches that the LOS circulator (duplexer) for receiving the cellular signal from the shadow-to-LOS path, providing the cellular signal to the LOS antenna, receiving the transmitter signal from the LOS antenna, and providing the transmitter signal to the Los-to-shadow path (the duplexer for (LOS) for receiving the cellular signal from the shadow antenna and providing the transmitting signal from the cell site base station to the shadow antenna by teaching Fig. 3 and column 6, lines 16 – column 7, lines 52). Kawano teaches that the shadow circulator for receiving the transmitter signal from the Los-to-shadow path, providing the transmitter signal to the shadow antenna, receiving the cellular signal from the shadow antenna, and providing the cellular signal to the shadow-to-LOS path (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches the duplexer for (shadow) for receiving the transmitting signal from the LOS antenna and providing the cellular signal from the mobile device to the LOS antenna).

Regarding **claim 5**, Kawano discloses that the amplification section further comprises a pair of amplifiers respectively positioned in the paths (Fig. 3 and column 6,

lines 16 – column 7, lines 52, where teaches a pair of amplifiers positioned in each the path).

Regarding **claim 13**. Kawano discloses that the antenna transmitting the transmitter signal and the antenna receiving the cellular signal is the same antenna (Fig. 2 and column 4, lines 33 – column 5, lines 61, where teaches interconnecting and communicating the signal between LOS antenna and the shadow antenna that are transmitting and receiving the transmitting signal and cellular signal).

Regarding **claim 19**. Kawano discloses that decoupling the transmitter signal prior to transmission to the RF shadow (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches the LOS antenna transmits the transmitting signal to the shadow antenna).

Kawano discloses that decoupling the cellular signal prior to transmission to the station (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches the shadow antenna transmits the cellular signal to the LOS antenna).

Regarding **claim 20**. Kawano discloses all the limitation, as discussed in claims 3 and 5.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 6-9 and 14-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano in view of Izadpanah (US 2003/0050099).

Regarding **claims 6 and 7**, Kawano discloses all the limitation, as discussed in claims 1 and 2. However, Kawano does not specifically disclose the limitation “a splitter disposed between a receiving antenna and each of the plurality of transmitting antennas and for splitting the transmitter signal into a corresponding plurality of transmitter signals respectively communicated to the transmitting antennas”. However, Izadpanah discloses the limitation “a splitter disposed between a receiving antenna and each of the plurality of transmitting antennas and for splitting the transmitter signal into a corresponding plurality of transmitter signals respectively communicated to the transmitting antennas” (Fig. 3 and pages 4, paragraphs 45 – 47, where teaches a splitter positioned between a receiving antenna and a plurality of transmitting antennas for splitting the signal into a plurality transmitting signals). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Kawano system as taught by Izadpanah, provide the motivation to achieve maximum signal transmitting coverage for signal adaptability in mobile communication system.

Regarding **claim 8**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 4 and 6. Furthermore, Kawano further discloses that an amplification section disposed between the LOS antenna and amplifier for amplifying the cellular signal received by at least one of the shadow antenna and for amplifying the transmitter signal received by the LOS antenna (Fig. 2, 3 and column 4, lines 33 – column 5, lines 51, where teaches the signal generator is amplified by amplifiers between the LOS antenna and shadow antenna for receiving/transmitting transmitting signal and cellular signal).

Regarding **claim 9**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 4 and 6.

Regarding **claim 14**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 1 and 6.

Regarding **claim 15**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 1 and 6. Furthermore, the each antenna transmits the transmitter signal along a unique transmission axis (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches the each antenna has unique transmission path for the transmitting signal and cellular signal).

Regarding **claim 16**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 6 and 8.

Regarding **claim 17**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 7 and 8.

Regarding **claim 18**, Kawano and Izadpanah disclose all the limitation, as discussed in claims 6 and 8. Furthermore, Kawano further discloses that the antennas includes antenna of different types (Fig. 3 and column 6, lines 16 – column 7, lines 52, where teaches could be the each antenna has a different type of antenna such that receiving antenna/transmitting antenna).

Allowable Subject Matter

5. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose “a plurality of amplification sections respectively disposed between the shadow antenna and the splitter each for amplifying a respectively received transmitter signal and for amplifying the cellular signal received by a respective one of the shadow antennas” as specified in the claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dupuy (US Patent number 5,659,879) discloses Method of Covering Shadow Areas in a Cellular Mobile Radio System and Radio Booster for Implementing This Method.

Maca et al. (US Patent number 6,745,003) discloses Adaptive Cancellation for Wireless Repeaters.

Bongfeldt (US Patent number 6,889,033) discloses Intelligent Gain Control in an On-Frequency Repeater.

Information regarding...Patent Application Information Retrieval (PAIR) system... at 866-217-9197 (toll-free)."

Any response to this action should be mailed to:

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or faxed (703) 308-9051, (for formal communications intended for entry)

Or: (703) 308-6606 (for informal or draft communications, please label "PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to USPTO Headquarters, Alexandria, VA.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John J. Lee** whose telephone number is **(571) 272-7880**. He can normally be reached Monday-Thursday and alternate Fridays from 8:30am-5:00

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pm. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, **Nay Aung Maung**, can be reached on (571) 272-7882. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

J.L
May 13, 2005

John J Lee


NAY MAUNG
SUPERVISORY PATENT EXAMINER